United States Patent [19]

Langer

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[54] **CONTAINER**

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[51] **Int. Cl.**[4] **B65D 5/24**

[52] **U.S. Cl.** **229/145;** 229/152; 229/154; 229/173; 229/186

[58] **Field of Search** ..... 229/145, 152, 154, 172, 229/173, 186, DIG. 4

[56] **References Cited**

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Primary Examiner—Stephen Marcus
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[57] **ABSTRACT**

A slot-less, one-piece container formed of scored cardboard, or its equivalent, the shape of such container being sustained by locking flaps which form interference fits with contiguous side-wall members and one of which simultaneously overlaps bellows-folded joining members between side members to keep the side-wall members in normal relationship to a base member, the locking flaps being in opposing pairs, each pair having a pair of abutting end members, one pair of end members lying on the base portion and the other pair of end members lying on the cover portion of the container.

6 Claims, 1 Drawing Sheet

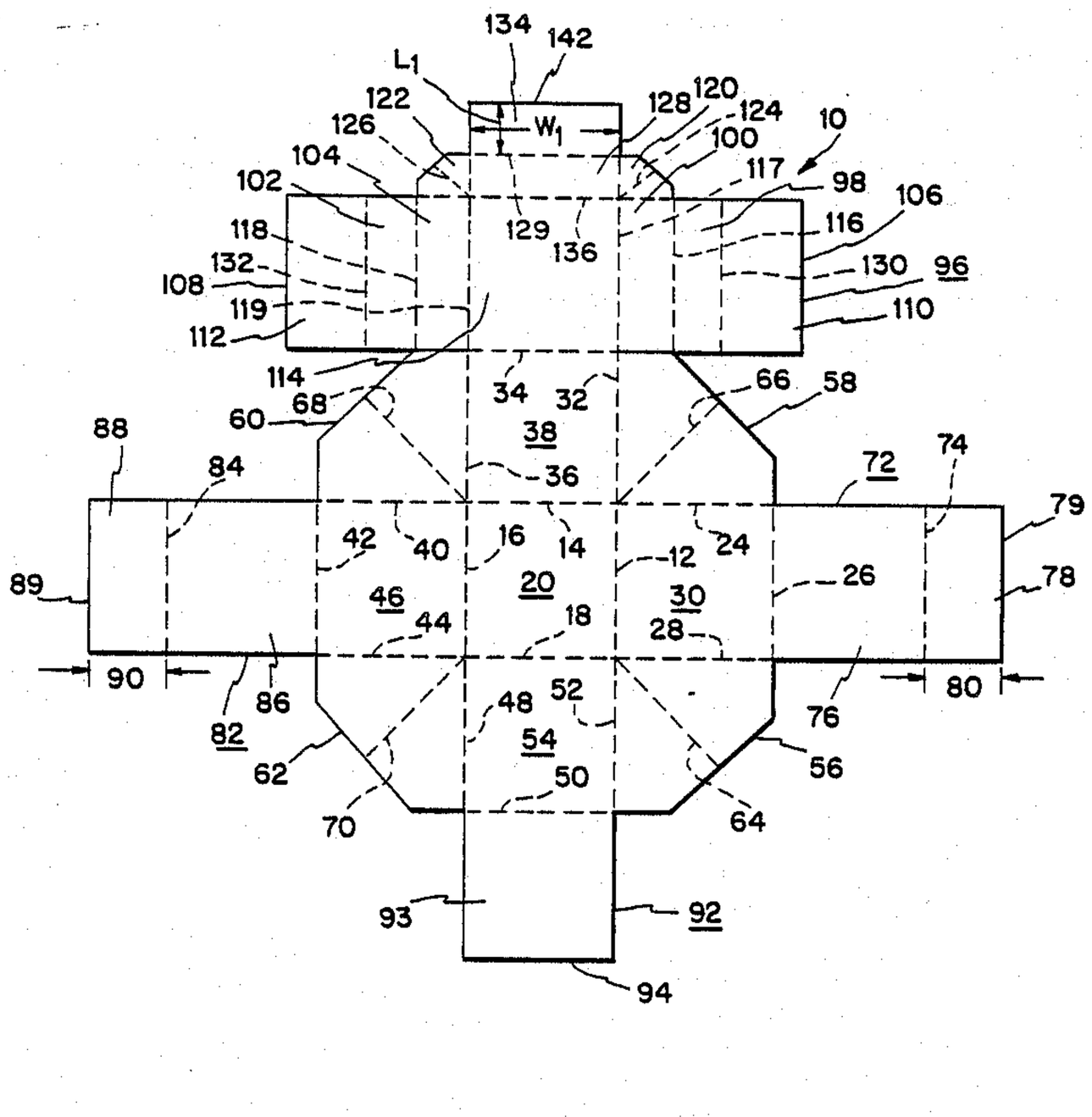

FIG. 1

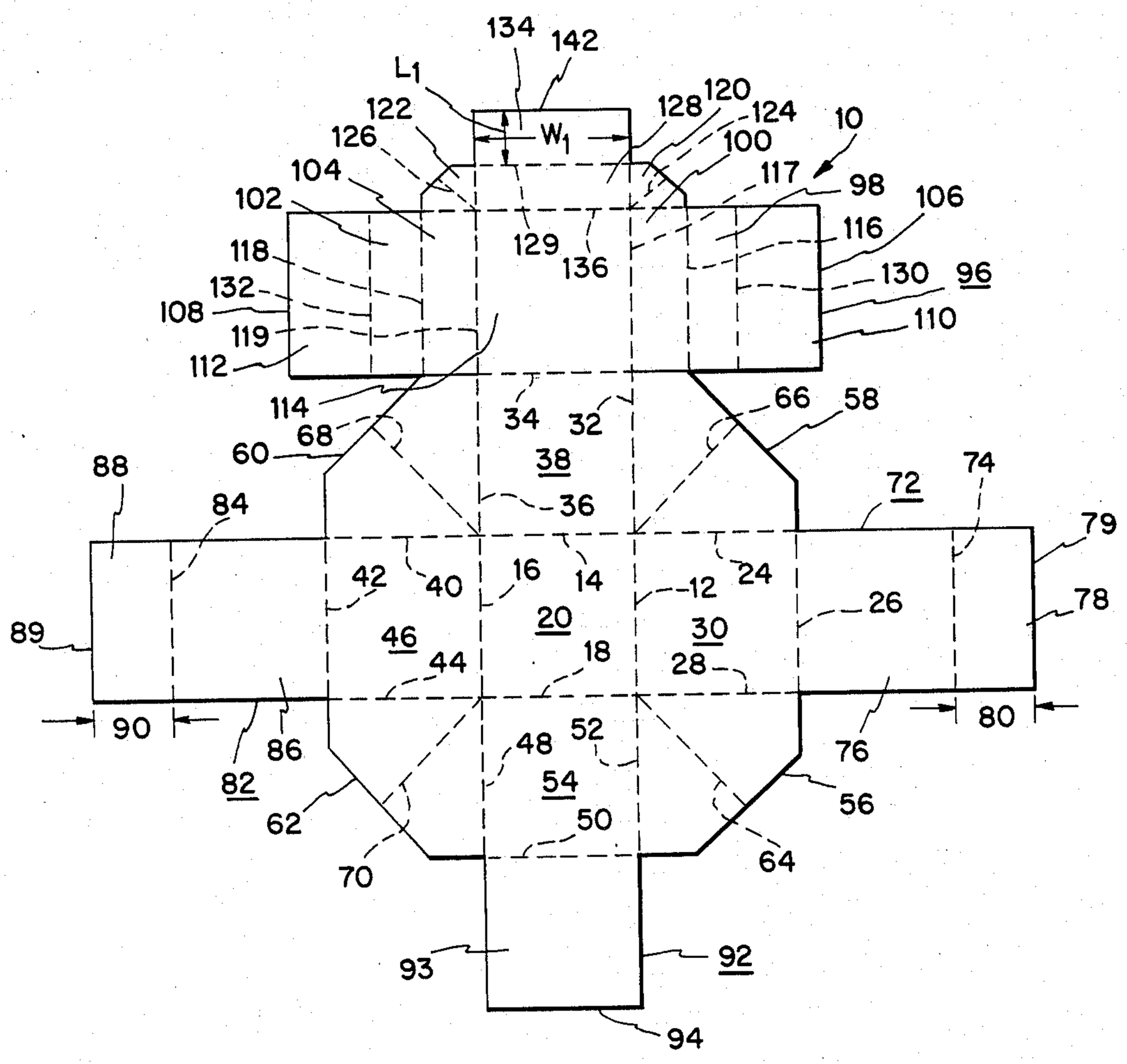
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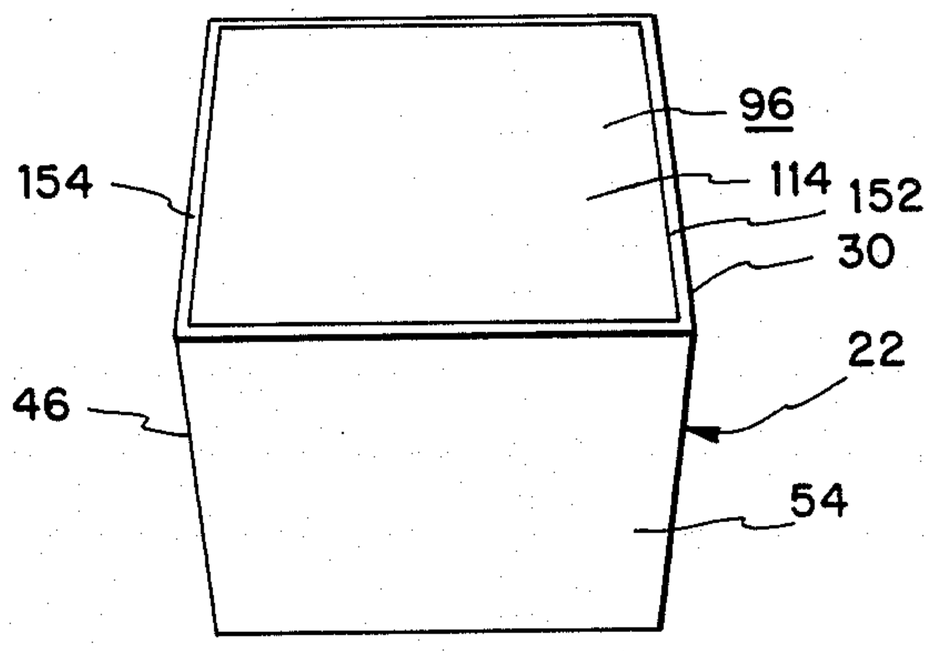
FIG. 2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CONTAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to containers formed from cardboard, or the like, and, more specifically, to such containers which retain their shapes without fasteners of any type.

2. Prior Art

Numerous containers appear in the prior art. For example, U.S. Pat. No. 2,443,431 (Ringler) and U.S. Pat. No. 615,417 (Wilcox). However, the containers covered by those patents require tabs (Ringler) or do not achieve minimal folds to complete fabrication (Wilcox).

Therefore, it is an object of this invention to overcome the various problems of the prior art devices.

It is a further object of this invention to provide a container which requires a minimum number of steps for its formation and which presents a smooth contour when assembled, without using tabs, slots and/or external retaining means.

SUMMARY OF THE INVENTION

By configuring and scoring the blank from which the container is formed so that locking flap members form interference fits with side wall members, a complete, self-sustaining cubical container with a wholly smooth outer surface is formed without tabs, slots or foreign fastening means of any kind. The container so formed is relatively inexpensive to produce and is pleasing to the eye as well as being utilitarian.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention and its method of operation can best be understood by reading the description which follows in conjunction with the drawings herein, in which:

FIG. 1 is a top plan view of the container according to this invention, before assembly; and,

FIG. 2 is an orthogonal view of a completely formed container according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1, blank **10** is made of paperboard, or the like. As can be seen from FIG. 1, blank **10**, being flat, can be shipped conveniently in stacks of blanks to effect savings in transportation costs. Also, economies can be realized in storage of the blanks by a user, such as a department store. The material of blank **10** may be impregnated or otherwise treated to properly contain the substance to be packed therein.

The selected paperboard or fiberboard, in the form of large sheets or rolls, is usually imprinted on one side thereof only, which side forms the exterior surface of the assembled container. The opposite or inner forming side of the board may, if desired, be suitably lined or treated to adequately protect the contents. The imprinted board may then be run through a cutting and scoring press which cuts out the marginal outline of the respective container-forming blanks and forms in each such blank the proper arrangement of scoring lines. The prepared blanks ejected from the cutting and scoring machine are then ready for shipment to the user.

The user, packer or merchandise manufacturer assembles each blank as needed into a complete container. The blank is so creased, shaped and formed in advance that the same may be set up into container form by a few simple manipulations and requires no staples, glue, stitches, or like holding means for retaining the same in rigid assembled container form. The container as assembled presents a four-sided parallelepiped or, more specifically, cubical construction with the bottom wall and the front, rear and side walls integrally and unbrokenly connected by scoring lines. The interior and exterior of the container presents smooth wall surfaces free from any irregularities.

More specifically, blank **10** has scoring lines **12, 14, 16** and **18** which are on what is intended to be the inside of the box ultimately formed from blank **10**. These scoring lines outline the base element **20** of the box or container **22** shown in FIG. **2**.

The scoring lines **12, 24, 26** and **28** outline side **30** of container **22**. The scoring lines **14, 32, 34** and **36** outline side **38** of container **22**. The scoring lines **16, 40, 42** and **44** outline side **46** of container **22**. And, the scoring lines **18, 48, 50** and **52** outline side **54** of container **22**.

The scoring lines **12, 14, 16, 18, 24, 28, 32, 36, 40, 44** and **48, 52** are shown equal in length because the ultimate container formed from blank **10** is intended to be cubical in shape

Joining elements **56, 58, 60** and **62** have diagonal scoring lines **64, 66, 68** and **70**, respectively, therein to permit a bellows-type of folding of the joining elements inwardly of the container **22**. To ease the bellows-folding process, blank **10** may be perforated along those scoring lines, **64, 66, 68** and **70** or the perforations substituted for those scoring lines. Side flap **72** has a scoring line **74** located so the element **76** has the dimensions of side **30** and element **78** has a length **80** which is one-half of the length of scoring line **18** on base **20**.

Retainer flap **92** has a scoring line **50** located so that element **93** has the same dimensions of side **54**.

When blank **10** is folded properly, sides **30, 38, 46** and **54** are normal to base **20**, joining elements **56** and **58** are folded inwardly at bellows-fold scoring lines **64** and **66**, respectively, and lie over the inner surface of side **30**. Side flap **72**, folded along scoring line **26** overlaps bellows-folded joining elements **56** and **58** and frictionally engages the inner surfaces of sides **38** and **54**. Element **78**, formed by the folding of side retainer flap **72** at scoring line **74**, lies on the inner surface of base **20**, extending one-half of the distance across base element **20**.

Similarly, joining elements **60** and **62** are folded inwardly at bellows-fold scoring lines **68** and **70**, respectively, and overlie the inner surface of side **46**. Side flap **82** is folded along scoring lines **42** and **84** which are located so that element **86** has the dimensions of side **46** and element **88** has a length **90** which is one-half of the length of scoring line **18**. Element **86** forms an interference fit within sides **38** and **54**, thus holding it in position with the leading edges **79** and **89** of elements **78** and **88**, respectively, abutting.

Retainer flap **92** is folded inwardly over side **54**. When so folded, retainer flap **92** engages, with an interference fit, the adjacent sides **30** and **46** of the container **22** (FIG. **2**) and its leading edge **94** engages the abutting elements **78** and **88**, holding them on the base element **20**.

To complete the formation of container **22** (FIG. **2**), cover portion **96** of blank **10** is folded, as follows.

Elements **100, 104** and **128** are folded inwardly (toward the viewer of FIG. **1**) to an attitude normal (90 degrees) to cover element **114**. This folding step necessi-

tates the bellows-folding of joining elements **120** and **122** along scoring lines **124** and **126**, respectively, with the result that joining element **120** lies on element **100** and joining element **122**, as a result of inward bellows-folding along scoring line **126**, lies on element **104**.

The folding of closure element **98** at scoring line **116** results in its overlying bellows-folded joining element **120** (which is lying on element **100**) and in its retaining the normal (90 degrees) attitude of element **100** with respect to cover element **114**. At the same time, outer element **110** folds along scoring line **130** with the result that it lies snugly on the inner surface of cover element **114**. Similarly, when closure element **102** is folded over element **104** along scoring line **118**, joining element **122** which, as a result of bellows-folding along scoring line **126** is lying on element **104**, is held in that position by closure element **102**. At the same time outer element **112** folds along scoring line **132** and lies on the inner surface of cover element **114**.

The extreme edges **106** and **108** of outer elements **110** and **112** will then abut each other along the center line of cover element **114**, the widths of elements **98**, **100**, **102** and **104** being equal and the width of elements **110** and **112** being one-half the width of cover element **114**.

The overlapped elements **98**, **100** and **102**, **104** form closure edges **152**, **154** (FIG. 2).

To complete the formation of cover portion **96**, lip element **134** is folded inwardly (towards the viewer of FIG. 1) and into a position where it overlaps element **128**. The width "W_1" of lip element **134** is such that it forms an interference fit within closure edges **152**, **154** (FIG. 2) of container **22**. The length "L_1" of lip element **122** is equal to the length of element **128** so that leading edge **142** engages and holds in place the abutting edges **106** and **108** of outer elements **110** and **112**, respectively, thus assuring the retention of the shape of cover portion **96**.

The outer width W_1 of cover portion **96** is slightly less than the inner width of base element **120**, the width of which is represented by the lengths of scoring lines **14** and **18**, to assure insertability of cover portion **96**, but with a snug or interference fit.

It should be noted that scoring lines **74**, **84** and **130** and **132** are on the outside of container **22**, i.e. on the side of blank **10** opposite to that which the viewer sees in FIG. **1**. Further, double scoring may be required if blank **10** is made of thick material.

In FIG. **2** the completed container is shown. It may be seen that that it is a smoothly contoured, aesthetically attractive container. The discussion which has just been completed shows that the container is easily assembled and inexpensive to manufacture. This combination assures commercial success for the container according to my invention.

While a particular embodiment has been shown and described, it will be apparent to those skilled in the art that variations and modifications may be made therein without departing from the spirit and scope of my invention. It is the purpose of the appended claims to cover all such variations and modifications.

I claim:

1. A slot-less, one-piece container having a self-sustaining shape including rectangular bottom, top and first, second, third and fourth side portions;

said first and third side portions opposing each other and each including a side element and an integral side-flap element, each of said side-flap elements, in use, overlapping its respective side element for the extent thereof and having a flexibly connected securing section extending over said bottom portion one-half of the width thereof, whereby said securing sections abut each other;

said second side portion having a second-side element extending from the entire length of one edge of said bottom portion for an extent equivalent to the length of said first and third side elements, respectively, and having a second flap element extending from said second side element at the edge thereof remote from said bottom portion and having the dimensions of said second side element;

said second side element having its two remaining sides joined to respective proximate edges of said first and third side elements by respective first and third joining elements each including a bellows-type of fold directed inwardly of said container, said joining elements, in the formed state of said container, overlapping said first and third side elements, respectively, on the respective inner surfaces thereof;

said second flap element, when in an operating position, forming an interference fit with said first and third side portions and abutting the inner surfaces of said securing sections of said first and third flap elements, thereby securing the position of such securing sections;

said fourth side portion including a fourth side element having the dimensions of said second side element and extending from the edge of said bottom portion opposite to that from which second side element extends;

said fourth side element being flexibly joined to proximate edges of said first and third side elements by respective second and fourth joining elements each including a bellows-type of fold directed inwardly of said container, said bellows-type of folds, in the formed state of said container, overlapping said first and third side elements, respectively, on the inner surfaces thereof;

said fourth side element having a flexibly-joined cover element extending from the edge of said fourth side element opposite to that joined to said bottom portion;

said cover element having outer dimensions approaching, but less than, those of said fourth side element, said cover element having left and right flap elements flexibly joined to opposing edges of said cover element, said left and right flap elements each having, in order, starting from the respective one of said opposing edges to which each flap element is attached, first and second edge-forming sections of equal length and a securing section, each of said first and second edge-forming sections being folded over the other section in its flap element to form an edge for said cover element, each of said securing sections having a length which is one-half of the width of said cover element, whereby, upon formation said cover securing sections lie in an abutting relationship to each other and lie on said cover element;

said cover element having a retainer portion extending from said cover element at the remaining edge thereof, said retainer portion comprising first and second flexibly connected retainer elements of equal length to each other and of equal width to said cover element, said first retainer element being closer to said cover element than said second re-

tainer element, said retainer elements overlying each other in the formed state of said container; and,

a pair of bellows-type retainer-joining portions joining opposite sides of said first retainer element to respective adjacent first edge-forming sections and overlying such sections when said container is formed.

2. Apparatus according to claim 1 in which said bottom, top and side sections are square and said container is a cube.

3. Apparatus according to claim 1 in which said flexible connections are formed by scoring.

4. Apparatus according to claim 3 in which selected ones of said flexible connections are double-scored.

5. Apparatus according to claim 1 in which selected ones of said flexible connections are formed by perforations.

6. Apparatus according to claim 1 in which the material of said container is cardboard.

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